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Thozetella coronata and *T. ypsiloidea* spp. nov. from the Brazilian Amazon forest

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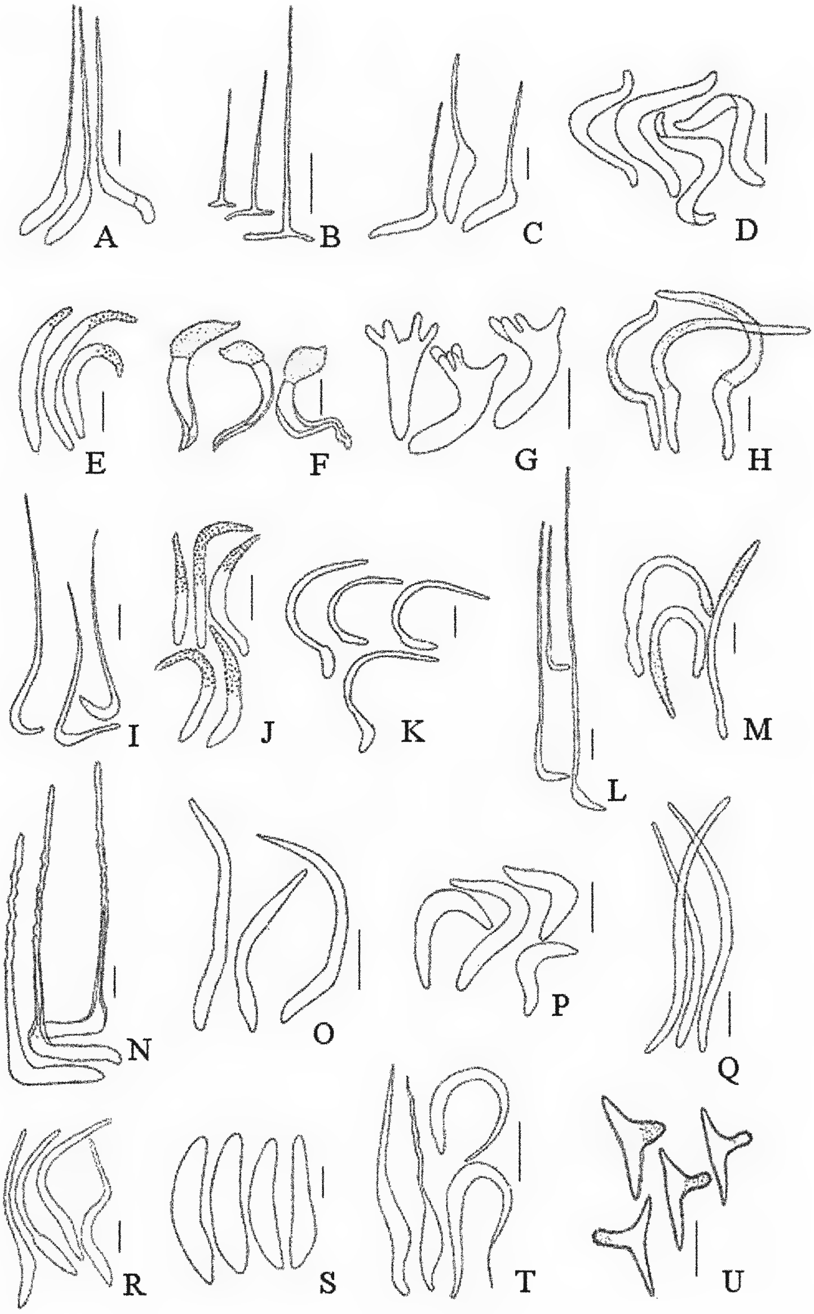
Abstract—Two new species, *Thozetella coronata* and *T. ypsiloidea* collected from submerged leaf litter in the Brazilian Amazon forest, are described and illustrated. *Thozetella coronata* is characterized by the production of clavate coronate hyaline microawns. *Thozetella ypsiloidea* is distinguished by finely verrucose Y-shaped hyaline microawns.

Key words—*Ascomycota*, *Chaetosphaeriaceae*, submerged litter, taxonomy, tropical fungi

Introduction

The Amazon forest is regarded as one of the most important reservoirs of biodiversity in the world (Peres et al. 2010). During a survey of microfungi associated with submerged decaying plant materials from the Brazilian Amazon, several unusual *Thozetella* specimens were found, two of which represent new species and are here described and illustrated.

Thozetella Kuntze is distinguished by the presence of sporodochial, synnematal, or effuse conidiomata, phialidic conidiogenous cells that produce unicellular setulate lunate hyaline conidia, and sterile elements called microawns. Microawns are a diagnostic feature of *Thozetella* (Seifert et al. 2011), and 19 species have been accepted in this genus (Index Fungorum 2016), with microawn morphology (Fig. 1) being the primary basis of species delimitation (Silva & Grandi 2013).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Materials & methods

Samples of submerged decaying plant materials were collecting from streams in the "Área de Proteção Ambiental Ilha do Combu", Pará State, Brazil. Samples were treating according to Castañeda Ruiz et al. (2016) and examined periodically under the stereomicroscope for 30 days. Semi-permanent and permanent microscope slides of fungi were mounted in 100% lactic acid and PVL resin (alcohol polyvinyl, lactic acid, and phenol). The specimens were identified by examination under a compound microscope and microscopic elements were measured at a magnification of ×1000. Photomicrographs were obtained with a Olympus BX51 microscope equipped with bright-field and Nomarski interference optics and a microscopy image acquisition DP25 digital color camera. The specimens are deposited in the Herbarium of Universidade Estadual de Feira de Santana, Bahia, Brazil (HUEFS).

Taxonomy

Thozetella coronata J.S. Monteiro, R.F. Castañeda & Gusmão, **sp. nov.** FIG. 2

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Differs from all other *Thozetella* species by its clavate, coronate microawn.

TYPE: Brazil, Pará State: Área de Proteção Ambiental Ilha do Combu, 1°29′S 48°25′W, on unidentified submerged leaves, 17.I.2011; coll. J.S. Monteiro (**Holotype**: HUEFS 196471).

ETYMOLOGY: Latin, *coronata*, in reference to the crown-like apical projections on the microawns.

COLONIES on the natural substrate cream-coloured. Mycelium immersed; hyphae septate, branched, cylindrical cells, 1.5–2.5 µm diam., smooth-walled, pale brown. CONIDIOMATA sporodochial, superficial, scattered, with a white conidial mass at the apex, 62.5–75 × 175–200 µm diam. CONIDIOPHORES macronematous, septate, cylindrical, smooth, pale brown. CONIDIOGENOUS CELLS monophialidic, integrated, determinate, terminal, cylindrical, smooth, pale brown, 13–15 × 2–3 µm, lacking collarette. CONIDIA lunate, aseptate, smooth, hyaline, 16–20 × 2–3 µm, with a single filiform setula at each end, 6–8 µm long. MICROAWNS mixed and immersed in the conidial mass on the natural substrate, aseptate, clavate, smooth, hyaline, 10–15 × 2–3 µm; apical part swollen, 4–6 µm wide, with 5–6 coronate projections, 1–1.5 µm long; base 1–1.5 µm wide. Teleomorph unknown.

FIG 1. Microawns of *Thozetella* spp.: A. *T. acerosa* (Paulus et al. 2004). B. *T. aculeata* (Silva & Grandi 2011). C. *T. boonjiensis* (Paulus et al. 2004). D. *T. buxifolia* (Allegrucci et al. 2004). E. *T. canadensis* (Nag Raj 1976). F. *T. capitata* (Silva & Grandi 2013). G. *T. coronata* (this work). H. *T. cristata* (Pirozynski & Hodges 1973). I. *T. cubensis* (Castañeda & Arnold 1985). J. *T. effusa* (Sutton & Cole 1983). K. *T. falcata* (Paulus et al. 2004). L. *T. gigantea* (Paulus et al. 2004). M. *T. havanensis* (Castañeda 1984). N. *T. nivea* (Pirozynski & Hodges 1973). O. *T. pinicola* (Jeewon et al. 2009). P. *T. queenslandica* (Paulus et al. 2004). Q. *T. radicata* (Morris 1956, as *Neottiosporella radicata*). R. *T. serrata* (Whitton et al. 2012). S. *T. submersa* (Barbosa et al. 2011). T. *T. tocklaiensis* (Agnihothrudu 1958, as *Thozetellopsis tocklaiensis*).U. *T. ypsiloidea* (this work). Scale bars = 20 µm.

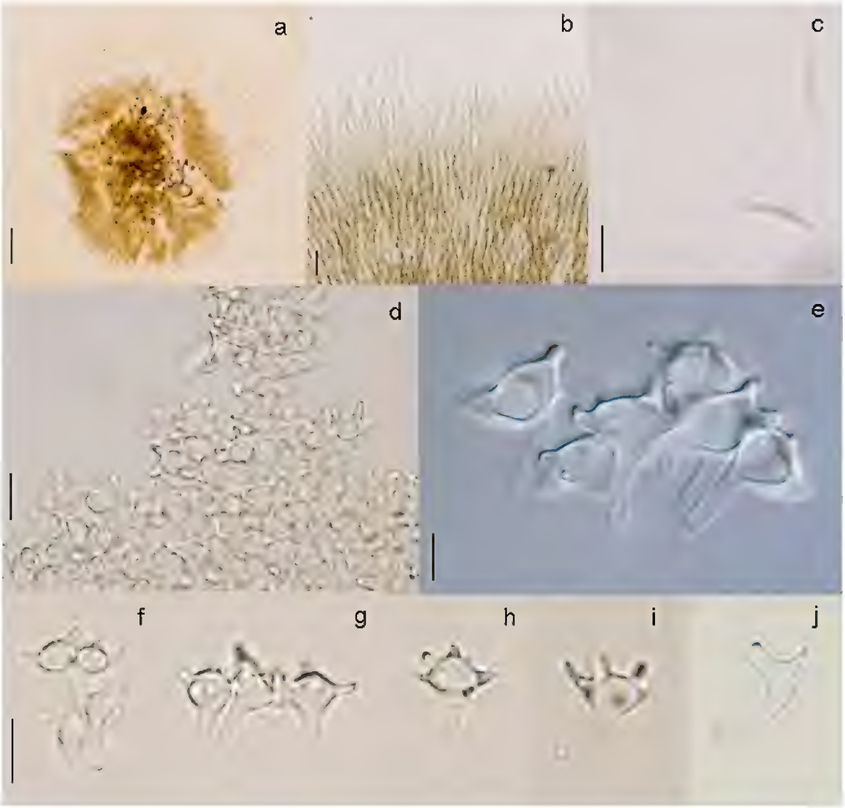

Fig. 2. *Thozetella coronata* (holotype: HUEFS 196471). a. Sporodochial conidioma. b. Conidiogenous cells. c. Conidia with setulae. d. General aspect of microawns. e. Detail of microawns. f–j. Microawns. Scale bars: a = 50 µm; b–j = 10 µm.

Note: All previously described *Thozetella* species differ from *T. coronata* by the absence of clavate, coronate microawns (Barbosa et al. 2011, Silva & Grandi 2013).

Thozetella ypsiloidea J.S. Monteiro, R.F. Castañeda & Gusmão, **sp. nov.** Fig. 3

MycoBank MB 814791

Differs from all other *Thozetella* species by its Y-shaped microawns.

Type: Brazil, Pará State: Área de Proteção Ambiental Ilha do Combu, 1°29′S 48°25′W, on unidentified submerged leaves, 18.X.2011; coll. J.S. Monteiro (**Holotype**: HUEFS 196464).

Etymology: Latin, *ypsiloidea*, in reference to the Y-shaped microawns.

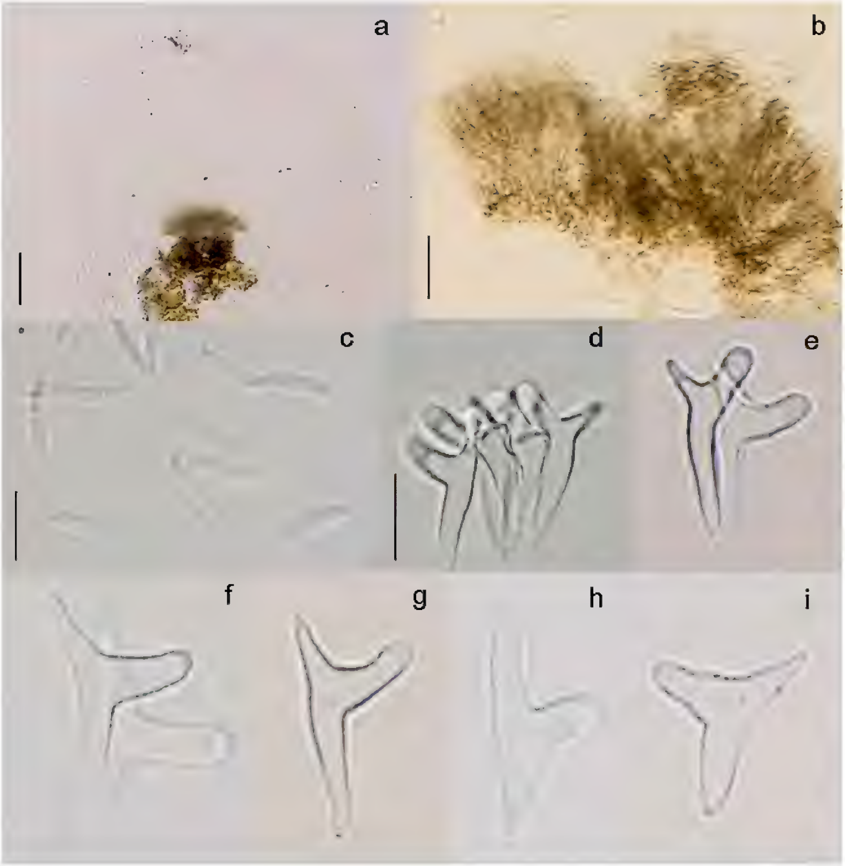

Fig. 3. *Thozetella ypsiloidea* (holotype: HUEFS 196464). a. Sporodochial conidioma. b. General aspect of conidiophores. c. Conidia with setulae. d–i. Microawns. Scale bars: a = 50 µm; b = 20 µm; c–i = 10 µm.

Colonies on the natural substrate cream-coloured. Mycelium immersed; hyphae septate, branched, cylindrical cells, 1.5–2 µm diam., smooth-walled, pale brown. Conidiomata sporodochial, superficial, scattered with a white conidial mass at the apex, 42.5–87.5 × 47.5–150 µm diam. Conidiophores macronematous, septate, cylindrical, smooth, pale brown. Conidiogenous cells monophialidic, integrated, determinate, terminal, cylindrical, smooth, pale brown, 12–25 × 2–3 µm, lacking collarette. Conidia lunate, aseptate, smooth, hyaline, 11–15 × 2–3 µm, with a single filiform setula at each end, 5–8 µm long. Microawns mixed and immersed in mass on the natural substrate, aseptate, Y-shaped, finely verrucose on arm which has rounded apex and partially verrucose or smooth on the other arm, partially smooth on stipe, hyaline, 12–22 × 8–13 µm; 2–4 µm wide at the base. Teleomorph unknown.

NOTE: All previously described *Thozetella* species differ from *T. ypsiloidea* by the absence of Y-shaped microawns (Barbosa et al. 2011, Silva & Grandi 2013).

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